REMARKS

This application has been reviewed in light of the Office Action dated December 4, 2002. Claims 1-4 and 7-10 are presented for examination, with Claims 1, 9, and 10 in independent form. Claim 10 has been added to provide Applicant with a more complete scope of protection. Claims 1 and 9 have been amended to define more clearly what Applicant regards as the invention, in terms that distinguish over the art of record. Applicant notes that the changes to Claims 2-4 affect matters of form only and do not, in any way, narrow the scope of any of these claims. Favorable reconsideration is requested.

Claim 3 was objected to as containing non-idiomatic English. Applicant has amended Claim 3 so that it now reads, "The ink jet recording head according to claim 2, wherein said stepped surface is located in an area of the substrate that becomes thinner in a stepwise fashion in a vicinity of the end face." Applicant believes the claim has been clarified and respectfully requests withdrawal of the objection.

Claims 1, 7, and 8 were rejected under 35 U.S.C. § 102(b) as being anticipated by the English abstract of JP 61-255866 (Hirasawa). Claims 2-4 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Hirasawa in view of U.S. Patent No. 5,796,416 (Silverbrook). Claim 9 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Hirasawa in view of U.S. Patent No. 4,940,413 (Childers et al.). Applicant respectfully traverses these rejections.

Applicant submits that amended independent Claims 1 and 9, together with newly added independent Claim 10 and the remaining dependent claims, are patentably distinct from the proposed combination of the cited prior art at least for the following reasons.

Claim 1 requires an ink jet recording head including a flat substrate, a wiring electrode, a stepped surface, a connection electrode, an electrical wiring member, and a sealing member. The flat substrate has an end face and front and back flat main surfaces. The front and back flat main surfaces have a larger area as compared to the end face. The wiring electrode is connected to an energy generating member formed on the front flat main surface of the substrate. The energy generating member generates energy to be utilized to discharge ink from a discharge port formed on the front flat main surface of the substrate. The stepped surface is provided at an end of the substrate and is provided lower than the front flat main surface. The connection electrode is electrically connected to the wiring electrode and provided on the stepped surface. The electrical wiring member is superimposed on the connection electrode and is electrically connected to the connection electrode through a bump electrode to supply an electrical signal or an electrical power to the connection electrode. The sealing member is for sealing and covering the connection electrode, the bump electrode, and the electrical wiring member on the stepped surface. The sealing member does not extend beyond the discharge port with respect to the front flat main surface.

An important feature of Claim 1 is that the sealing member is for sealing and covering the connection electrode, the bump electrode, and the electrical wiring member on the stepped surface, wherein the sealing member does not extend beyond the discharge port with respect to the front flat main surface. Support for this feature is described in the specification at least at page 9, lines 1-12, which states in part that "[a]fter the bump electrode 80 is joined to the wiring substrate 60, the connected portion is sealed with a sealing material 70 in a manner to prevent leaking . . . . At this point, the

convex portion of the sealing material 70 does not fly out from the ink discharge port 40 due to the step formed in a manner as described above, so that there is no influence exerted on the distance between the ink discharge port 40 and the medium." As shown in Figure 1, the sealing material 70 does not extend beyond the ink discharge port 40, and consequently, does not interfere with the ink discharge port 40 from maintaining a close distance to the recording medium. A closer distance between the ink discharge port 40 and the recording medium can provide increased image quality. (See page 2, lines 17-19). It is to be understood, of course, that the scope of Claim 1 is not limited to the details of this embodiment, which is referred to only for purposes of illustration.

The Examiner stated that Hirasawa, relied upon to reject Claim 1, teaches "an ink jet print head comprising a flat substrate (1) having a front surface, a back surface and an end face, wherein the front and back surfaces have a larger area than the end face. An electrothermal converting element (2) is provided on the substrate and is positioned opposite to a discharge port (7). A wiring electrode (10) is formed on the front main surface of the substrate. A connection electrode (10) is connected to the wiring electrode and is provided on a surface other than the front and back main surfaces." (Paragraph 5, pages 2-3 of the Office Action). Even if Hirasawa be deemed to teach or suggest these features, Applicant submits that nothing in Hirasawa would teach or suggest the sealing member for sealing and covering the connection electrode, the bump electrode, and the electrical wiring member on the stepped surface, wherein the sealing member does not extend beyond the discharge port with respect to the front flat main surface, as recited in Claim 1.

Accordingly, Applicant submits that Claim 1 is patentable over Hirasawa.

Independent Claim 9 includes the same feature of the sealing member for sealing and covering the connection electrode, the bump electrode, and the electrical wiring member on the stepped surface, wherein the sealing member does not extend beyond the discharge port with respect to the front flat main surface, as recited in Claim 1. Accordingly, Claim 9 is believed to be patentable over Hirasawa for at least the same reasons as discussed above in connection with Claim 1.

Childers et al., used to reject Claim 9 in combination with Hirasawa, is understood by Applicant to relate to an electrical make/break interconnect having high trace density. The Examiner stated that Childers et al. teaches an ink jet head mounted on a carriage. (See paragraph 7, page 4 of the Office Action). Applicant has not found anything in Childers et al. that teaches or suggests the sealing member for sealing and covering the connection electrode, the bump electrode, and the electrical wiring member on the stepped surface, wherein the sealing member does not extend beyond the discharge port with respect to the front flat main surface, as recited in Claim 9.

Accordingly, Applicant submits that, at least for the reasons discussed above, the proposed combination of Hirasawa and Childers et al., assuming such combination would even be permissible, would still fail to teach or suggest the sealing member for sealing and covering the connection electrode, the bump electrode, and the electrical wiring member on the stepped surface, wherein the sealing member does not extend beyond the discharge port with respect to the front flat main surface, as recited in Claim 9. Accordingly, Applicants submit that Claim 9 is patentable over this prior art, taken separately or in any proper combination.

Independent Claim 10 includes the same feature of the sealing member for sealing and covering the connection electrode, the bump electrode, and the electrical wiring member on the stepped surface, wherein the sealing member does not extend beyond the discharge port with respect to the front flat main surface, as discussed above in connection with Claims 1 and 9. Accordingly, Claim 10 is believed to be patentable for at least the same reasons as discussed above in connection with Claims 1 and 9.

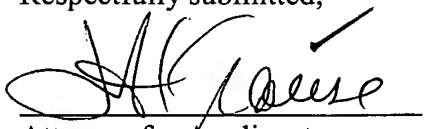
A review of the other art of record has failed to reveal anything that, in Applicant's opinion, would remedy the deficiencies of the art discussed above, as applied against the independent claims herein. Therefore, those claims are respectfully submitted to be patentable over the art of record.

The other rejected claims in this application depend from Claim 1 discussed above, and, therefore, are submitted to be patentable for at least the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, individual reconsideration of the patentability of each claim on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicant respectfully requests favorable reconsideration and the allowance of the present application.

Applicant's undersigned attorney may be reached in our New York Office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address listed below.

Respectfully submitted,



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